

REMARKS

This is in response to the Office Action mailed on 30 June 2006. Claims 1-11, and 13-14 are pending in the application, and Claims 1-14 have been rejected.

By this Response and Amendment, Claims 1, 9, 10, 12, and 13 have been amended; Claim 12 has been cancelled; and arguments traversing the rejection of Claims 1-11, and 13-14 are presented.

No new matter has been added.

In view of the amendments above and the remarks below, Applicants respectfully request reconsideration and allowance of the subject Application. Accordingly, Claims 1-11, and 13-14 are pending as listed above.

About the Invention

The claimed invention is directed to a method of enabling a portable and/or mobile host, using a standard Mobile IP protocol, to dynamically acquire a home address from Dynamic Host Configuration Protocol servers in the home network of the mobile host, in a manner consistent with the Dynamic Host Configuration Protocol (hereinafter DHCP) upon powering up in a foreign network.

Ordinarily, mobile hosts that power up in a foreign network cannot contact addressing servers in their home network. Dynamic home addressing, as required when a mobile host powers up in a foreign network, is not specified in the Mobile-IP standard. Therefore, a mobile host that powers up in a foreign network with no home address cannot contact addressing servers in its home network through conventional DHCP broadcasting. Any upstream broadcast messages sent from the mobile host to the home network will be received by a local server

or relay in the foreign network, which may offer an address from its own lease pool, but not the host's home network.

The present claimed invention provides a solution for this problem using transient tunneling – a novel two-stage addressing procedure for mobile hosts that power up in a foreign network. A bootstrapping agent – an addressing element that is co-located with a Mobile-IP home agent – facilitates the creation of the temporary tunnel over which standard DHCP transactions can take place. The temporary tunnel allows DHCP transactions to occur between the home network and foreign network in an efficient manner with reduced latency times – as compared to non-encapsulated IP tunneling techniques over the Internet.

The method allows the mobile host to contact addressing servers in its home network, even as it powers up in a foreign network.

Rejection under 35 U.S.C. § 102(e)

Independent Claim 12 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,510,153 issued to Inoue et al. (hereinafter, Inoue.) Claim 12 has been cancelled, and the rejection is therefore rendered moot.

Rejections under 35 U.S.C. § 103(a)

Claims 1-11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,510,153 issued to Inoue et al. (hereinafter Inoue) in view of U.S. Patent No. 6,707,809 issued to Warriar et al. (hereinafter, Warriar.)

Inoue is directed to various mobile IP communications schemes in which a mobile computer acquires addresses when the mobile computer is moving locations, such as from a home network to a foreign network. (See, i.e., Inoue, Summary of the Invention). In one of the examples disclosed in Inoue, the mobile computer is turned-on at a visiting site (Inoue, Col. 16, lines 4-24), and a DHCP Home Address is acquired from the mobile computer's home network, if available (Inoue, Col. 16, lines 31-68, Col. 17, lines 1-11). Communication between the mobile computer from the foreign network, and the home network occurs through a series of messages transmitted over the Internet and the home network (See, e.g., Inoue Fig. 15). That is, once movement is detected indicating the mobile device is in a foreign network, such as through an advertisement broadcast by the mobile computer over the Internet (Inoue, Col. 12, lines 20-28), then the home address is acquired through a series of messages transmitted over the Internet including broadcasting in the home network requesting the home address (Inoue, Col. 16, lines 64-67).

Warrier is directed to a method for forwarding data from a source of the data to a mobile wireless node that undergoes a transition to an idle state. (Warrier, Abstract) Warrier teaches a mobility binding record (MBR) that is maintained either by (i) the foreign agent if the mobile node is connected, or (ii) the home agent for currently registered and active mobile nodes. (Warrier, Col. 6, lines 43-44) The MBR maintains certain identifying information, such as home agent IP address, foreign agent care of address, serial number or IMSI number. The MBR associates nodes in a database with the last foreign agent to which the mobile node was connected. (Warrier, Col. 3, lines 65-67) Data is tunneled from

the home agent to the foreign agent for delivery to the mobile node. (Warrier, Abstract)

Claim-By-Claim Analysis

Claim 1 recites:

A method for configuring a portable and/or mobile host that powers up in a foreign network to connect to the Internet, the method comprising:

creating a bootstrapping agent that works cooperatively with a Mobile IP home agent to initially allocate a temporary home address to said portable and/or mobile host that powers up in a foreign network,

using the Mobile IP protocol to contact said Mobile IP home agent and request said bootstrapping agent to allocate said temporary home address to said portable and/or mobile host, and

using said temporary home address to create a temporary tunnel between a foreign agent associated with said portable and/or mobile host and said Mobile IP home agent, wherein said temporary tunnel is used to communicate configuration information including a permanent home address allocated by a Dynamic Host Configuration Protocol (DHCP) protocol between the portable and/or mobile host and a home network of the portable and/or mobile host, when the portable and/or mobile host powers up in the foreign network, thereby allowing the portable and/or mobile host that powers up in a foreign network to connect to the Internet.

The cited combination of Inoue and Warrier fails to teach or suggest the method of Claim 1.

Firstly, Inoue does not disclose using a bootstrapping agent to assign a home address to the mobile device. Instead Inoue describes first broadcasting a message in the home network to acquire a home address for the mobile address, which is less efficient than having a dedicated bootstrapping agent to perform the function automatically without the need for a broadcast message.

Secondly, Inoue fails to disclose using a temporary tunnel to obtain configuration data including a permanent home address from the home network of the mobile device as defined by Applicants' Claim 1. Inoue only describes acquiring the home address through a series of messages transmitted over the Internet. Unlike Applicants' invention, however, Inoue is devoid of any teaching or suggestion of setting up a temporary tunnel between the foreign network and home network for the purpose of increasing data transmission efficiency and hence speed of acquiring a home address from the home network. In fact, the Examiner recognizes that Inoue does not disclose the use of a more efficient transient tunnel for communication between the mobile device in the foreign network and the home network. (Office Action, Page 3, paragraph 7.) Thus Inoue fails to teach the bootstrapping agent and transient tunnel as required by Applicants' Claim 1.

The Examiner turns to Warriar for teaching the establishment of a temporary tunnel between a foreign agent associated with the host and the M-IP home agent, wherein the temporary tunnel is used to communicate configuration information. (Office Action, page 3, paragraph 8) Therefore, the Examiner argues it would have been obvious to adapt Warriar "to ensure that data is efficiently sent to the mobile when it is visiting another site (network)."

It is noted that Warriar is void of any discussion of where a portable and/or mobile computer is powered up in a foreign network and a temporary tunnel is used to acquire a permanent IP address as defined in Applicants' Claim 1. Warriar merely describes the transfer of data via a portable and/or mobile node. There is neither a discussion of replacing a temporary IP address with a permanent IP address, nor is there a discussion of obtaining an IP address when

the mobile node is powered-up in a foreign network. In fact, the only discussion in Warrier is for data transmission when a computer has already connected in a foreign network, and not for acquiring a permanent IP address in a foreign network. For this reason alone, Claim 1 is allowable over the cited combination.

Further, Warrier does not consider the idea of obtaining an IP address when the mobile node is powered-up in a foreign network. Therefore, there would be no motivation to combine the invention of Warrier with Inoue since Warrier fails to contemplate a mobile device powering-up in a foreign network, and Inoue fails to recognize any problem with a mobile device powering-up in a foreign network and communicating with its home network using a temporary tunnel to acquire the home address. The mere fact that a concept from Warrier may be combined with Inoue does not signify that such a combination was desired or contemplated by either reference, or that the resultant combination was obvious.

Still, furthermore, Warrier does not teach using a bootstrapping agent that temporarily assigns an IP address upon power up in a foreign network as defined in Applicants' Claim 1. Warrier merely teaches listing of previous address registrations of mobile nodes.

Accordingly, the combination of Inoue and Warrier fails to teach or suggest Claim 1. Even if the references are combinable, the references fall short of suggesting the claimed invention for the reasons discussed above. Applicants therefore respectfully request that the § 103 rejection of Claim 1 be withdrawn.

Claims 2-8 depend from Claim 1 and are allowable by virtue of this dependency. Additionally, these claims recite additional features that, when taken together with those of Claim 1, define methods that are not taught or suggested by the Inoue/ Warrier combination.

For example, **Claims 4 and 6** define using the bootstrapping agent to assign IP addresses from an address pool of addresses dedicated for assignment to mobile device in foreign networks. Inoue, as mentioned above, to acquire a permanent address must make a broadcast to the entire home network to request the address, if one is available, which is less efficient than dedicated pool and use of a bootstrapping agent as defined in Claims 4 and 6.

Independent Claim 9 recites:

A method for enabling a mobile host without an IP home address to connect to the Internet when powering up in a foreign network, comprising:

obtaining a temporary IP home address for said mobile host powering up in a foreign network without an IP home address from an IP address source accessible through a mobile IP home agent,

establishing a transient tunnel between said mobile IP home agent and a mobile IP foreign agent associated with said mobile host while in said foreign network, using said temporary IP home address,

acquiring, via said transient tunnel, configuration parameters including a permanent IP home address from a Dynamic Host Configuration Protocol (DHCP) server in the home network of said mobile host, and

replacing said transient tunnel with a new tunnel between said mobile IP home agent and said mobile IP foreign agent using said permanent IP home address, thereby allowing a mobile host without an IP home address to connect to the Internet when powering up in a foreign network.

The combination of Inoue and Warriar does not teach or suggest the features of Claim 9. Namely, for the reasons discussed above with respect to Claim 1 the Inoue/Warrior combination neither teaches nor suggests the establishment of a transient tunnel for the purpose of obtaining a permanent IP

address from a DHCP server or replacing the transient tunnel with a new tunnel once the permanent address is obtained.

It is noted that the Examiner alleges that Warriar uses a temporary IP home address and replacing the transient tunnel with a new tunnel between the mobile IP foreign agent using the permanent IP home address, therefore allowing the mobile device without an IP home address to connect to the Internet when powered in a foreign network, citing columns 6 line 62 to column 7, line 6 of Warriar (Office Action, Page 5, paragraph 17).

Applicants respectfully disagree. Warriar merely describes the transfer of data via a mobile node. There is neither a discussion of replacing a temporary IP address with a permanent IP address, nor is there a discussion of obtaining an IP address when the mobile node is powered-up in a foreign network. In fact, the only discussion in Warriar is for data transmission when a computer has already connected in a foreign network, and not for acquiring a permanent IP address in a foreign network.

Thus, Claim 9 is allowable over the combination of Inoue and Warriar. Applicants respectfully request that the § 103 rejection of Claim 9 be withdrawn.

Independent Claim 10 recites:

A method for enabling configuration of a portable host device that powers up in a foreign network to communicate using the Internet, said method comprising the steps of:

communicating a temporary home address to said portable host device that powers up in a foreign network from a bootstrapping agent operating cooperatively with a mobile IP home agent that serves said portable host device when it operates in said foreign network,

establishing a transient bidirectional communication link between said portable host device

and said mobile IP home agent using the Mobile IP protocol and said temporary home address, and obtaining a permanent address from a Dynamic Host Configuration Protocol (DHCP) DHCP server via said transient bidirectional communication link, wherein said permanent address is used thereafter to configure said portable host that powers up in a foreign network to communicate with the Internet.

The combination of Inoue and Warriar does not teach or suggest the features of Claim 10. Namely, for the reasons discussed above with respect to Claims 1 and 9 the Inoue/Warrior combination neither teaches nor suggests the use of bootstrapping agent for establishment of a transient bidirectional communication link for the purpose of obtaining a permanent IP address from a DHCP server using the tunnel. Furthermore, the Inoue/Warrior combination does not assign a permanent IP address to a portable host that is powered up in a foreign network. For at least these reasons Claim 10 is allowable over the combination of Inoue and Warriar. Accordingly, Applicants respectfully request that the § 103 rejection of Claim 10 be withdrawn.

Claim 11 depends from Claim 10 and is allowable by virtue of this dependency. Additionally, Claim 11 recites additional features that, when taken together with those of Claim 10, define methods that are not taught or suggested by the Inoue/Warrior combination.

Independent Claim 13 recites:

A method for configuring a mobile host that powers up in a foreign network, comprising:

setting up a temporary IP tunnel via the Mobile IP protocol to connect said mobile host to its home network,

using an IP broadcasting protocol over said temporary IP tunnel so that said mobile host can discover a Dynamic Host Configuration Protocol (DHCP) addressing server in its home network, and

using the DHCP protocol to communicate addressing and configuration information between said addressing server and said mobile host.

The combination of Inoue and Warrier does not teach or suggest the method of Claim 13. Namely, for at the reasons discussed above, the Inoue/Warrier combination neither teaches nor suggests the establishment of a temporary IP tunnel for the purpose of obtaining a permanent IP address from a DHCP addressing server using the temporary IP tunnel. For at least these reasons Claim 13 is allowable over the combination of Inoue and Warrier. Accordingly, Applicants respectfully request that the § 103 rejection of Claim 13 be withdrawn.

Independent Claim 14 recites:

In a system arranged to use an IP tunnel to relay via the Internet communication packets that are destined to a mobile host from a home server in said host's home network to a foreign server when said host is in a foreign network, wherein the establishment of said IP tunnel requires said home server and foreign server to know the IP home address of said mobile host, a method for configuring said mobile host when it powers up in said foreign network without said IP home address, comprising the steps of obtaining a temporary IP home address for said mobile host from an IP address source accessible through said home server, establishing a transient tunnel between said home server and said foreign server using said temporary IP home address, acquiring, via said transient tunnel, permanent configuration parameters including a permanent IP home address from a DHCP server in a region served by said home server, replacing said transient tunnel with a new tunnel between said home server and said foreign server using said permanent IP home address.

The combination of Inoue and Warrier does not teach or suggest Claim 14. Namely, for the reasons discussed above the Inoue/Warrier combination neither

teaches nor suggests the establishment of a transient tunnel for the purpose of obtaining a permanent IP address from a DHCP server using the temporary tunnel. Furthermore, the Inoue/Warrier combination does not teach or suggest replacing the transient tunnel with a new tunnel once the permanent address is obtained. For at least these reasons Claim 14 is allowable over the combination of Inoue and Warrior. Accordingly, Applicants respectfully request that the § 103 rejection of Claim 14 be withdrawn.

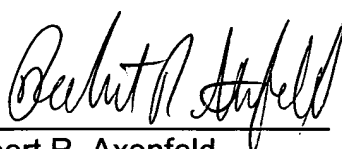
Conclusion

All of the objections and rejections in the outstanding Office Action of 30 June 2006 have been responded to, and Applicants respectfully submit that the pending Claims 1-11, and 13-14 are now in condition for allowance. Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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